

(11) Patent Kokai [laid-open] Publication Number: Tokkai Hei 11 [1999]-79235

(12) PATENT KOKAI PUBLICATION (A)

(19) JAPANESE PATENT OFFICE (JP)

(21) Patent Application Number: Hei 9 [1997]-236740

(22) Patent Application Date: Heisei 9 (1997) September 2

(43) Patent Kokai Publication Date: Heisei 11 (1999) March 23

(51) Int. Cl. ⁶	ID Codes	FI	
B 65 D 73/02		B 65 D 73/02	D
85/86		H 05 K 13/02	B
H 05 K 13/02		B 65 D 85/38	N

Number of Claims: 2 OL (Total 4 pages [in Japanese original])

Examination Request: Not Requested

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[Amendments: There are no amendments attached to this patent. Translator's note]

[Note: All names, addresses, company names, and brand names are translated in the most common manner. Japanese language does not have singular or plural words unless otherwise specified with numeral prefix or general form of plurality suffix. Translator's note]

(54) [TITLE OF THE INVENTION]

Pressure-sensitive Adhesive Sheet Packaging Body

[Nenchaku sheet hosotai]

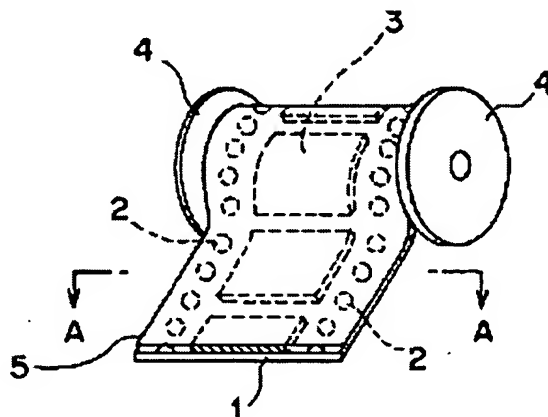
(57) [ABSTRACT] (with correction [note: although original document states "with correction", no correction has been found in the original pages. Translator's note])

[SUBJECT]

It offers a pressure-sensitive adhesive packaging body that does not take up storage place and ease of handling, and can accommodate to an automated assembly line without allowing adhesion of dust and the like.

[MEANS OF SOLUTION]

A pressure-sensitive sheet (3) is placed between protruding parts (2), (2) that are formed on a surface of a carrier tape (1), and this carrier tape (1) is coiled on a reel (4), and furthermore, a protective film (5) is made to laminate at above-described protruding parts (2), (2) in a non-contacting manner with the pressure-sensitive adhesive-sheet (3).



[CLAIMS]

[CLAIM ITEM 1]

A pressure-sensitive adhesive sheet packaging body is characterized by the fact that a pressure-sensitive adhesive sheet that is prepared through arrangement of a pressure-sensitive adhesive layer on either one side or both sides of a base layer [support layer, hereafter] comprising either a rubber or resin is placed between protruding parts that are arranged on a carrier tape, and this carrier tape is wound on a reel.

[CLAIM ITEM 2]

The pressure-sensitive adhesive sheet packaging body that is described in the claim item 1, wherein a protective film is made to laminate at protruding parts of the carrier tape in a non-contacting state with said pressure-sensitive adhesive sheet.

[DETAILED EXPLANATION OF THE INVENTION]

[0001]

[TECHNICAL FIELDS OF THIS INVENTION]

This invention relates to the pressure-sensitive adhesive packaging body that is used for fixation of various machineries, electrical/electronic parts, or plastic molding goods and the like or for a temporary fixation of various parts and the like during the time of their manufacturing or inspection.

[0002]

[PRIOR ART]

Regarding pressure-sensitive adhesive sheets, the ones comprising a base layer and pressure-sensitive adhesive layer[s] that is provided with rubber-like elasticity and softness for purpose of improving stress relaxation characteristic and a following property of the pressure-sensitive adhesive sheets are known. As this pressure-sensitive adhesive sheet's base layer, rubber such as silicone rubber and the like or resin has been generally used; and as pressure-sensitive adhesive layer, silicone gel, silicone group pressure-sensitive adhesive agents, rubber group pressure-sensitive adhesive agents, or acryl group pressure-sensitive adhesive agents and the like have been used.

[0003]

According to such pressure-sensitive adhesive sheets, because pressure-sensitive adhesive agent is exposed in the surface generally, in order to avoid mutual pressure-sensitive adhesion of the pressure-sensitive adhesive sheets, the pressure-sensitive adhesive sheet (12) is placed with a gap on a pasteboard (11) with or without coating of a release agent as illustrated in the Figure 6, and in order to further prevent from mutual adhesion of the pasteboards (11) and to avoid adhesion of dust and the like on the pressure-sensitive adhesive sheet (12), it is packaged and supplied through a method of placing each one of pasteboard in a case (13).

[0004]

[SUBJECTS SOLVED BY THIS INVENTION]

However, according to above-explained conventional packaging method, as each one of pasteboard is placed within a case, it becomes bulky considering the numbers of pressure-sensitive adhesive sheets, and it is not economical as it requires allocation of storage places at many locations more than required at the line that uses said pressure-sensitive adhesive sheets; and in addition, when pressure-sensitive sheet is detached from the pasteboard, it involves such works as pressing of the pasteboard with hands while paying utmost attention and care so not to touch the other pressure-sensitive adhesive sheets, and operator has been confronted with a constant tension and has been subjected to a fair level of mental as well as physical burdens.

[0005]

In addition, this packaging method could not be used for the automated assembly lines without relying on a manual work of the operator to indicate a very poor workability. The subject of this invention is to offer the pressure-sensitive adhesive sheet packaging body that does not take up storage place, easy to handle, and does not allow adhesion of dust and the like on such pressure-sensitive adhesive sheet, and can be accommodated to automated assembly line.

[0006]

[MEANS USED TO SOLVE THE SUBJECTS]

This invention's pressure-sensitive adhesive packaging body is structured with a pressure-sensitive adhesive sheet that is placed in between protruding parts that are arranged on a carrier tape, and this is wound on a reel. Through such structure, it is possible to save storage space significantly compared to the case when one and each pasteboard is contained in a case. In addition, said protruding parts work to not only protect the pressure-sensitive adhesive sheet that is wound on the reel, but also it creates a gap between piled and wound carrier tape to prevent from adhesion of the pressure-sensitive adhesive sheet to the bottom plane of the carrier tape. Furthermore, through lamination of the protective film at the protruding parts of the carrier tape in a non-contacting manner with the pressure-sensitive adhesive sheet, it is possible to prevent from adhesion of dust and the like on the pressure-sensitive adhesive sheet. Through containing of the pressure-sensitive adhesive sheet on a carrier tape as explained above, this can be applied to an automated assembly line to improve productivity. In addition, regarding protruding parts, they are generally formed in a longitudinal direction of the side edge parts of the carrier tape, and the pressure-sensitive adhesive tape is placed between these protruding parts with a set gap.

[0007]

[IMPLEMENTATION FORMATS OF THIS INVENTION]

This invention's pressure-sensitive adhesive sheet packaging body is explained below specifically based on the Figures. Figure 1 illustrates a diagonal view of one example of this invention's pressure-sensitive adhesive sheet packaging body; and Figure 2 illustrates a diagonal view that shows an example of arrangement of protective sheet on the pressure-sensitive adhesive sheet packaging body of the Figure 1; and Figure 3 illustrates a cross sectional view along A-A line of sight of the pressure-sensitive adhesive sheet packaging body of the Figure 2, and Figures 4 (a), (b) illustrate partial diagonal view that shows formed pattern of protruding parts on a carrier tape.

[0008]

As illustrated in the Figure 1, this invention's pressure-sensitive adhesive sheet packaging body is constituted of a carrier tape (1), protruding parts (2) formed on top plane of that, a pressure-sensitive adhesive sheet (3) that is placed in between those protruding parts (2), (2), and a reel (4) that takes-up carrier tape (1). In addition, according to this invention's pressure-sensitive adhesive sheet packaging body that is illustrated in the Figure 2, a protective film (5) that is extended over the protruding parts (2), (2) of the pressure-sensitive adhesive sheet packaging body of the Figure 1 is laminated (placed) on the pressure-sensitive adhesive sheet (3) in a non-contacting manner (make reference to the Figure 3), and is taken- up on a reel.

[0009]

As the carrier tape (1) that is used in this invention, plastic sheets of which sheets are made of polyethylene terephthalate, or vinyl chloride resin and the like showing about 0.07 ~ 0.5 mm thickness of base material may be used; and use of vinyl chloride resin with 0.1 ~ 0.2 mm is recommended when processing capability of protrusions (emboss), handling property, and cost.

[0010]

In addition, the protruding parts (2) that are formed on the carrier tape (1) are generally formed at both side edges of the carrier tape (1) with equal distance as illustrated in the Figure 1; and it is all right to form in a continuous manner like a bank form as illustrated in the Figure 4 (a); and furthermore, it is all right to form these at equal distance in right angle to the long side of carrier tape as illustrated in the Figure 4 (b).

[0011]

The protruding parts (2) are formed by using ordinary embossing roll. Although pattern shape of the protruding parts (2) is not particularly decided, in order to allow winding in as long length as possible when it is taken up on the reel, they may be molded on one side of a plastic sheet, and it is necessary to set the height of the protruding parts (2) so the pressure-sensitive adhesive tape would not come in contact with a bottom plane of the carrier tape that is on the top when carrier tape is piled and coiled on the reel; and height of 0.3 ~ 3.5 mm is recommended judging from the thickness of pressure-sensitive adhesive sheet (3). In addition, regarding the shape of protruding parts (2), no particular limitations are placed as long as it falls within said height range; and the shape of that cross section may be of various shapes such as semi-spherical, triangular, or quadrangle and the like.

[0012]

Examples of protective film (5) includes papers laminated with plastic film, paper or cloth impregnated or coated with synthetic resin, Kraft paper, and sheets of polyethylene terephthalate, or vinyl chloride resin. It is preferable when thickness of the protective film (5) is about 0.1 ~ 0.5 mm from the standpoint of process capability and handling as well as it does not flex when it is laminated on the carrier tape.

[0013]

The pressure-sensitive adhesive tape (3) that is placed in between protruding parts (2), (2) on the carrier tape, in other words, the one that is placed on a non-embossed surface of the carrier tape is structured that a pressure-sensitive adhesive layer is arranged on either one or both planes of base layer comprising rubber or resin. Figure 5 illustrates a structure of pressure-sensitive adhesive sheet on which both planes of base layer (6), pressure-sensitive adhesive layer (7) is arranged. As this base layer (6), when it is necessary to provide rubber-like elasticity to the pressure-sensitive adhesive sheet (3), it is recommended to use an elastomer showing elastic property; and more specifically, for instance, chloroprene rubber, silicone rubber, styrene-butadiene rubber, acrylonitrile-butadiene rubber, butadiene rubber, butyl rubber, fluorine rubber, or urethane rubber and the like may be mentioned. To this, when there is no need to provide a rubber-like elasticity to the pressure-sensitive adhesive sheet (3) as in the case of temporary fixation purpose, it can be made in a thin layer form, and above all, it is preferable when it shows some hardness; and more specifically, nonwoven cloth or resin films such as polyester film, polyimide film, or polyethylene film and the like may be mentioned as examples. It is preferable when thickness of base layer (6) is 10 ~ 2,000 μm , or more preferably, 30 ~ 500 μm from the standpoint of following property with an adherend.

[0014]

Regarding the pressure-sensitive adhesive layer (7), the one that easily deforms with an external force but shows no flowability is preferable; and more specifically, for instance, silicone gel, or fluorine resin gel is recommended when close adhesion or pressure-sensitive adhesive strength to an adherend is considered. Regarding thickness of the pressure-sensitive adhesive layer (7), about 5 ~ 500 μm or more preferably, 20 ~ 50 μm is preferable from the standpoint of pressure-sensitive adhesive force to an adherend. Such pressure-sensitive adhesive sheet (3) is placed in between protruding parts (2), (2) formed at side edges of the carrier tape (1) generally having 3.0 ~ 5.9 mm gap. The reel (4) that is used for this invention's pressure-sensitive adhesive sheet packaging body may be of already known general type; and in particular, paper tube to which a side panel is fixed may be used. In addition, it is preferable when sending holes are formed along the side edge of the carrier tape in order to accommodate this invention's pressure-sensitive adhesive sheet packaging body to automated assembly machine.

[0015]

[EXAMPLE]

Regarding the carrier tape, vinyl chloride resin made sheet of Shinetsu Vinyl Chloride Sheet SP#7000 (brand name made by Shinetsu Polymer K.K.) with 0.15 mm thickness and 30 mm width was put through embossing rolls to form protrusions parts with 1 mm height at both side edges on the surface of carrier tape in continuous manner to be used as the carrier tape that is illustrated in the Figure 1. A pressure-sensitive adhesive sheet that is cut to 8 x 8 mm size was formed between protruding parts (2), (2) of this carrier tape, and the pressure-sensitive adhesive layer of said pressure-sensitive adhesive sheet was formed by using chlorine resin rubber BYTON MV-260 [transliteration] (brand name made by Showa Denko. DuPont K.K.) showing 0.1 mm thickness as a base layer, and arranging fluorine resin Gel Sifel [transliteration] 807 A/B (brand name made by Shinetsu Kagaku Kogyo K.K.) at 0.2 mm on its both side planes to gel.

[0016]

This pressure-sensitive adhesive sheet was placed between protruding parts of said carrier tape at 3 mm distance; and then, as a protective film, a vinyl chloride resin made sheet (ZENSHUTSU [transliteration, it literally reads as previously presented, translator's note] with 0.2 mm and 30 mm width was laminated on the protruding parts of the carrier tape in a non-contacting manner with pressure-sensitive adhesive sheet; and then, this carrier tape was take up on the reel. When this was set on individual automated assembly machine, supply of pressure-sensitive adhesive tape was carried out very smoothly.

[0017]

[EFFECTS OF THIS INVENTION]

According to this invention's pressure-sensitive adhesive packaging body, because pressure-sensitive adhesive sheet is placed in a form that is pasted to a carrier tape, it is possible to supply this to an assembly machine automatically, and in addition, when a protective film is laminated on the protruding parts, dust and the like would not become adhered to the pressure-sensitive adhesive sheet to improve quality of pressure-sensitive adhesive sheet in addition to provide ease of handling. In addition, by forming a pressure-sensitive adhesive sheet packaging body that is wound on a reel, accommodation of the pressure-sensitive adhesive sheet to automated assembly machine becomes possible to simplify and automate the assembly process to result in reduction in assembly cost.

[BRIEF DESCRIPTION OF THE FIGURES]

[FIGURE 1]

It illustrates a diagonal view of one example of this invention's pressure-sensitive adhesive sheet packaging body.

[FIGURE 2]

It illustrates a diagonal view of an example that a protective sheet is arranged on the pressure-sensitive adhesive sheet of the Figure 1.

[FIGURE 3]

It illustrates a cross section along A-A line of sight of the pressure-sensitive adhesive sheet packaged body of the Figure 2.

[FIGURES 5]

The (a) and (b) illustrate partial diagonal views of forming pattern of the protruding parts on the carrier tape.

[FIGURE 5]

It illustrates a schematic cross section that shows a structure of the pressure-sensitive adhesive sheet.

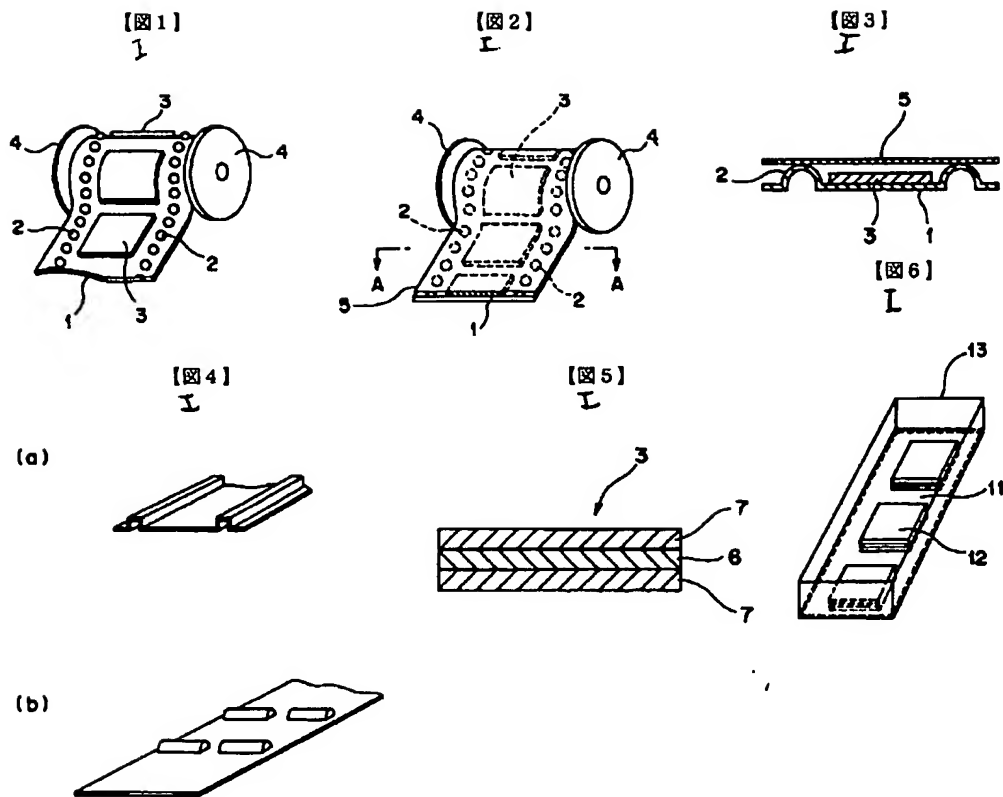
[FIGURE 6]

It illustrates a diagonal view of conventional packaging state of pressure-sensitive adhesive sheet.

[DESCRIPTION OF CODES]

1: carrier tape, 2: protruding part, 3: pressure-sensitive adhesive sheet, 4: reel, 5: protective film, 6: base layer, 7: pressure-sensitive adhesive layer, 11: pasteboard, 12: pressure-sensitive adhesive sheet, 13: case

I: Figure



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